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DECEMBER 5.

The President, GENERAL ISAAC J. WISTAR, in the chair.

One hundred and thirty-eight persons present.

A paper entitled "Earthenware of Florida, Collections of Clarence B. Moore," by W. H. Holmes, was presented for publication.

DR. BENJAMIN SHARP made a communication on his recent visit to the Hawaiian Islands. (No abstract).

Heredity in the Social Colonies of the Hymenoptera.—At the meeting of the Academy held May 23 PROF. EDW. D. COPE, referring to the question of heredity in the social colonies of the Hymenoptera, remarked that perhaps the strongest case that can be made out against the theory of use-inheritance has been presented by Mr. W. P. Ball,* viz.: that of the variety of structure displayed by the neuter members of the colonies of ants and termites. Mr. Ball describes these briefly as follows:

"But there happens to be a tolerably clear proof that such changes as the evolution of complicated structures and habits and social instincts *can* take place independently of use-inheritance. The wonderful instincts of the working bees have apparently been evolved (at least in all their later social complications and developments) without the aid of use-inheritance nay, in spite of its utmost opposition. Working bees, being infertile "neuters," cannot, as a rule, transmit their own modifications and habits. They are descended from countless generations of queen bees and drones, whose habits have been widely different from those of the workers, and whose structures are dissimilar in various respects. In many species of ants there are two, and in the leaf-cutting ants of Brazil there are *three* kinds of neuters which differ from each other and from their male and female ancestors "to an almost incredible degree."¹ The soldier caste is distinguished from the workers by enormously large

*The Effects of Use and Disuse. Nature Series, 1890, P. 24.

¹Origin of Species, pp. 230, 232; Bates' Naturalist on the Amazons. Darwin "is surprised that no one has hitherto advanced the demonstrative case of neuter insects, against the well-known doctrine of inherited habit, as advanced by Lamarck." As he justly observes, "it proves that with animals, as with plants, any amount of modification may be effected by the accumulation of numerous, slight, spontaneous variations, which are in any way profitable, without exercise or habit having been brought into play. For peculiar habits confined to the workers or sterile females, however long they might be followed, could not possibly affect the males and fertile females, which alone leave any descendants." Some slight modification of these remarks, however, may possibly be needed to meet the case of "factitious queens," who (probably through eating particles of the royal food) become capable of producing a few male eggs.